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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,979	08/26/2003	Bruce Fletcher Johnson	133976	2828
6147 7590 04/30/2007 GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309			EXAMINER SCHLIENTZ, LEAH H	
			ART UNIT 1618	PAPER NUMBER
			MAIL DATE 04/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/647,979	<b>Applicant(s)</b> JOHNSON ET AL.	
	<b>Examiner</b> Leah Schlientz	<b>Art Unit</b> 1618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16, 18 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) 21-23, 25 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 18, 20 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Acknowledgement of Receipt***

Receipt of Applicant's Response, filed 2/26/2007, in response to the Office Action mailed 10/25/2006 is acknowledged. Claims 16, 18 and 20 – 26 are pending, of which claims 21 – 23, 25 and 26 are withdrawn from consideration as being drawn to non-elected species. Claims 16, 18, 20 and 24 are readable upon the elected invention.

### ***Response to Arguments***

Applicant's arguments with respect to claims 16, 18 and 20 have been considered but are moot in view of the new ground(s) of rejection. All previous rejections not reiterated herein have been withdrawn as having been overcome by amendment.

### ***Claim Rejections - 35 USC § 102***

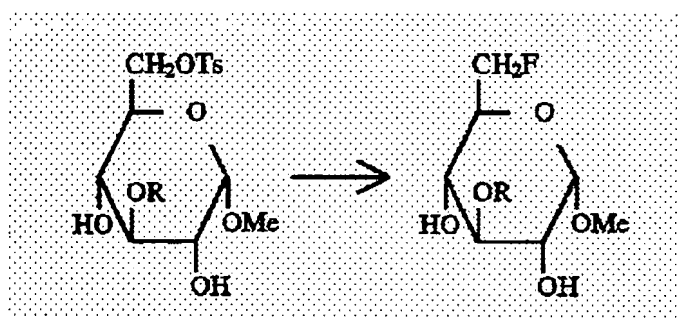
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

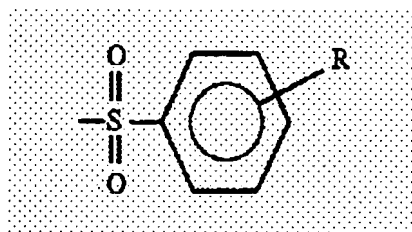
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Chambers (US 5,705,713).

Chambers discloses the preparation of fluorinated carbohydrates (column 1, lines 6 – 8). The process occurs by displacement of a primary sulfonyloxy group (which is conjugated to a sugar) by fluorine. See Figure below (column 2, lines 42 – 50).



The process involves the conversion of a reactive oxy-acid ester of formula  $R_1R_2CHOX$  into a fluoride of formula  $R_1R_2CHF$ , where X is a sulfonic acid residue (column 1, line 65 – column 2, line 20). In addition to toluenesulfonate pictured above, the leaving group (X) may be a benzenesulfonate moiety, as pictured below, where R may also be alkyl with 4 carbon atoms.



R = alkyl with 1 to 4 carbon atoms

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 16, 18, 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chambers (5,705,713) in view of Johnson (US 5,264,570).

Chambers discloses a process for the preparation of fluorinated carbohydrates, such as the conversion of a reactive oxy-acid ester of formula  $R_1R_2CHOX$  into a fluoride of formula  $R_1R_2CHF$ , as set forth above. The X moiety (leaving group) of the formula may be a benzenesulfonate moiety substituted with an alkyl with 1 – 4 carbon atoms (column 1 – 2).

Chambers fails to specifically recite that that fluorine which is reacted with the leaving group is  $^{18}F$ , and thus that a radiolabeled carbohydrate is prepared.

Johnson discloses a method of producing an imaging agent, 2- $^{18}F$ -fluoro-2-deoxy-D-glucose. A targeting moiety, an acetyl protected  $\beta$ -D-mannopyranose (i.e. a saccharide) is bound to a leaving group, a trifluoromethanesulfonyl group. Upon contacting the 1,3,4,6-tetra-O-acetyl-2-O-trifluoromethanesulfonyl-2-deoxy- $\beta$ -D-mannopyranose compound with a solution of  $^{18}F$ , the leaving group is substituted with

the detectable species (i.e.  $^{18}\text{F}$ ), and the imaging agent,  $^{18}\text{F}$ -FDG is recovered (column 2, lines 53+, and claims 1 – 3).

Johnson fails to teach that the leaving group is a benzenesulfonate moiety substituted with an alkyl with 4 – 10 carbon atoms.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize radiolabeled fluorine in the substitution reaction of Chambers to prepare a radiolabeled fluorinated carbohydrate because both Chambers and Johnson are directed to the preparation of fluorinated carbohydrates, and because Johnson uses  $^{18}\text{F}$  in his reaction to produce an  $^{18}\text{F}$  labeled glucose. One would have been motivated to do so, and would have had a reasonable expectation of success in doing because Johnson specifically teaches that  $^{18}\text{F}$  labeled sugars are useful as a radiopharmaceutical for Positron Emission Tomography (PET) (column 1, lines 1 – 20). As such, it would have also been obvious to substitute the triflate leaving group in the method of preparing an imaging agent taught by Johnson with a leaving group which is a benzenesulfonate moiety substituted with an alkyl containing 4 carbon atoms, as shown by Chambers, and one would have been motivated to do so because Chambers has demonstrated that such a leaving group is capable of being substituted by fluorine in a nucleophilic substitution reaction.

### ***Conclusion***

No claims are allowed at this time.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

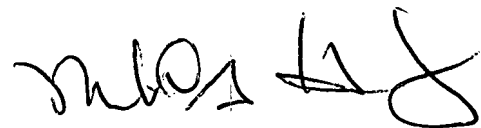
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is 571-272-9928. The examiner can normally be reached on Monday - Friday 8 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LHS

A handwritten signature in black ink, appearing to read 'Michael G. Hartley', is positioned above the printed name.

MICHAEL G. HARTLEY  
SUPERVISORY PATENT EXAMINER